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SOUTH FLORIDA WATER MANAGEMENT MODEL V5.0 INPUT MAN PAGE FOR								
asrinput.dat = Defines ASR System information including Parameters for Canals, Reservoirs, LOK, and EAA basin runoff as sources and/or destination for ASR. Also, Identifies the grid location of the reservoirs used for injection and/or recovery for ASR. (unit no. 17; read in subroutine sr_input.F)								

COLUMNS	VARIABLE NAME	FORMAT	DESCRIPTION
1. TOTAL NUMBER OF ASR SYSTEMS AND SOME OPTIONS FOR THE ESTUARIES			
..-..	NTOTASR	Free	Total Number of ASR systems in the model domain.
..-..	cal_asr_flag	Free	Flag for Caloosahatchee basin/reservoir(1-ASR exists,0-noASR exists)
..-..	stl_asr_flag	Free	Flag for ST Lucie Basin/reservoir(1-ASR exists,0 - no ASR exists)
..-..	iuse_asr_env1	Free	Option to use ASR to meet Caloosahatchee estuarine requirements (1=yes,0-no)
..-..	iuse_asr_env2	Free	Option to use ASR to meet St Lucie estuarine requirements (1=yes,0-no)
2 through 10 are repeated NTOTASR times			
2. READ the asr capacities (injection and recovery) in MGD and recovery efficiency C factor(a 0.6 factor means 60% recovery, 40% loss),also read minimum bubble C size required for recovery rate can be larger than injection rate.			
1-10	asr_incap(I)	F10.3	ASR Injection capacity(MGD) for System #I
11-20	asr_outcap(I)	F10.3	ASR Recovery Capacity (MGD) for System #I
21-30	asreffic(I)	F10.3	Recovery efficiency (0.7 means 70% recovery , 30% loss)
31-40	rmin_bubble_size_add_rec(I)	F10.3	Minimum bubble size (acre-ft) required before recovery rate is able to exceed injection rate,if desired.
3. FOR SYSTEM # I, NUMBER OF CANAL SOURCES, NAME AND TRIGGER (MINIMUM) STAGE IN EACH CANAL FOR INJECTION INTO ASR. IMPORTANT: FOR CALOOS & STLUCIE ASRS, DEFINE NUMBER OF CANAL SOURCES = 0			

1-5	ncnl_src_to_asr(I)	I5, 2X	Number of Canal sources for ASR system #I
..-..	nl_src_name(J)	A5, 2X	Names for all ncnl_src_to_asr(I) Canal sources.
..-..	cnl_stg_trig_inj_asr(I,J)	F6.2,2x	Trigger stage for all ncnl_src_to_asr(I) Canal sources.

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4. FOR SYSTEM #I, NUMBER OF RESERVOIR SOURCES, NAME OF RESERVOIRS, AND ASR CAPACITY FRACTION EACH SOURCE CAN USE  
 IMPORTANT: FOR CALOOS & STLUCIE ASRS, DEFINE NUMBER OF RESERVOIR SOURCES = 0

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1-5	nres_src_to_asr(I)	I5, 2X	Number of reservoir sources for SR system #I
..-..	res_src_name(J)	A6, 2x	Names for all nres_src_to_asr(I) reservoir sources
..-..	frac_cap_src(I,J)	F6.2,2x	Fraction of total ASR capacity each source can use

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4.1 FOR SYSTEM #I, READ THIS RECORD ONLY IF NUMBER OF RESERVOIR SOURCES FOR SYSTEM #I IS GREATER THAN 0

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1-6	charid_asr(I,J)	2x, A6	Character id.
..-..	trig_asr(I,J)	F7.1	Trigger level (ft. NGVD) above which injection to ASR occurs for each reservoir source.

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5. FOR SYSTEM #I, NUMBER OF EAA BASIN RUNOFF SOURCES AND BASIN NUMBER FOR EACH SOURCE.  
 (1- Miami Canal basin,2-NNRC-HILL basin,3-WPB Canal basin)  
 IMPORTANT: FOR CALOOS & STLUCIE ASRS, DEFINE NUMBER OF EAA RUNOFF SOURCES = 0

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1-5	neaa_src_to_asr(I)	I5	Number of EAA basin runoff sources to ASR
..-..	ea_src_num(I,J)	I5	EAA basin number for each of the neaa_src_to_asr(I) sources. (1- Miami Canal basin,2-NNRC-HILL basin,3-WPB Canal basin)

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6. FOR SYSTEM #I, NUMBER OF LOK SOURCES, LAKE ID NUMBER OF EACH SOURCE. (1 - LOK)

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1-5	nlok_src_to_asr(I)	I5	Number of LOK Sources
..-..	lake_src_num(I,J)	I5	Lake ID Number for each of the nlok_src_to_asr(I) sources.

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7. FOR SYSTEM #I, NUMBER AND NAMES OF THE CANAL DESTINATIONS FOR RECOVERY FROM ASR  
 IMPORTANT: FOR CALOOS & STLUCIE ASRS, DEFINE NUMBER OF CANAL DESTINATIONS = 0

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1-5	ncnl_dest_from_asr(I)	I5, 2x	Number of Canal destinations for recovery ASR system #I
..-..	cnl_dest_name(J)	A5, 2x	Canal names for all ncnl_dest_from_asr(I) canals

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7.1 FOR SYSTEM #I, READ THIS RECORD ONLY IF NUMBER OF CANAL DESTINATIONS FOR SYSTEM #I IS GREATER THAN 0  
 FOR SYSTEM #I, AND DESTINATION #J, NUMBER AND NAMES OF THE CANALS BEING SERVED BY ASR

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1-5	no_cnl_ws(i,j)	I5, 2x	Number of canals served by destination j and ASR i
..-..	icnl_no_ws_name(k)	A5, 2x	Names of each of the no_cnl_ws(i,j) canals

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8. FOR SYSTEM #I, NUMBER AND NAMES OF THE RESERVOIR DESTINATIONS FOR RECOVERY FROM ASR  
 IMPORTANT: FOR CALOOS & STLUCIE ASRS, DEFINE NUMBER OF RESERVOIR DESTINATIONS = 0

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1-5	nres_dest_from_asr(I)	I5, 2x	Number of Reservoir destinations for recovery ASR system #I
..-..	res_dest_name(J)	A5, 2x	Reservoir names for all nres_dest_from_asr(I) Reservoirs

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8.1 FOR SYSTEM #I, READ THIS RECORD ONLY IF NUMBER OF RESERVOIR DESTINATIONS FOR SYSTEM #I IS GREATER THAN 0  
FOR SYSTEM #I, AND DESTINATION #J, NUMBER AND NAMES OF THE RESERVOIRS BEING SERVED BY ASR

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1-8	charid_asr_rec(i,j)	2x, A6	Character id for destination j
..-..	trig_asr_rec(I,J,1)	F7.1	Reservoir stage (ft.) below which recovery from ASR is triggered for each reservoir destination.
..-..	trig_asr_rec(I,J,2)	F7.1	Reservoir stage (ft.) above which recovery from ASR is still allowed for each reservoir destination.

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9. FOR SYSTEM #I, NUMBER OF EAA BASIN RUNOFF DESTINATIONS AND BASIN NUMBER FOR EACH DESTINATION.

(1- Miami Canal basin,2-NNRC-HILL basin,3-WPB Canal basin)

IMPORTANT: FOR CALOOS & STLUCIE ASRS, DEFINE NUMBER OF EAA RUNOFF DESTINATIONS = 0

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1-5	neaa_dest_from_asr(I)	I5	Number of EAA basin runoff destination to ASR
..-..	ea_dest_num(I,J)	I5	EAA basin number for each of the neaa_src_to_asr(I) destinations. (1- Miami Canal basin,2-NNRC-HILL basin,3-WPB Canal basin)

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10. FOR SYSTEM #I, NUMBER OF LOK DESTINATIONS, LAKE ID NUMBER OF EACH DESTINATION. (1 - LOK)

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1-5	nlok_dest_from_asr(I)	I5	Number of LOK destinations for system #I
..-..	lake_dest_num(I,J)	I5	Lake ID Number for each of the nlok_dest_from_asr(I) destinations.

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11. READ THIS RECORD AS MANY TIMES AS THE TOTAL NUMBER OF RESERVOIRS AVAILABLE FOR ASR INJECTION AND ASR RECOVERY  
TWO RECORD MAY EXIST FOR ONE RESERVOIR IF IT IS USED FOR INJECTION AS WELL AS FOR RECOVERY

11.1 READ THIS RECORD IF THE NUMBER OF RESERVOIRS AVAILABLE FOR ASR INJECTION IS GREATER THAN ZERO

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..-..	nnodes_res_to_asr(ia,j)	Free	Number of grid cells for Reservoir ia and ASR # j (we usually have 1 ASR)
..-..	icol_asr(ia,j,k)	Free	Column number of each of the nnodes_res_to_asr(ia,j) cells.
..-..	irow_asr(ia,j,k)	Free	Row number of each of the nnodes_res_to_asr(ia,j) cells.

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11.2 READ THIS RECORD IF THE NUMBER OF RESERVOIRS AVAILABLE FOR ASR RECOVERY IS GREATER THAN ZERO

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..-..	nnodes_res_from_asr(ia,j)	Free	Number of grid cells for Reservoir ia and ASR # j (we usually have 1 ASR)
..-..	icol_asr_rec(ia,j,k)	Free	Column number of each of the nnodes_res_to_asr(ia,j) cells.
..-..	irow_asr_rec(ia,j,k)	Free	Row number of each of the nnodes_res_to_asr(ia,j) cells.

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END OF DESCRIPTION FOR INPUT FILE "asrinput.man"

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